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A Reading Clinic

By HELEN COE CLOWES

In the summer of 1929 a Reading Clinic was established at the School of Education of Western Reserve University in connection with a reading-clinic course. Forty-four out of a hundred children who applied were selected on the basis of their reading disabilities as stated by the schools from which they came. The number of children in the clinic was dependent upon the number of students in the course, for each child in the clinic had a student as tutor in reading.

The clinic staff was composed of a physician, an oculist, a psychologist, a reading specialist, a psychiatrist, two social workers, a classroom teacher, and the director of the clinic. The students taking the course were skilled teachers of reading, supervisory assistants, supervisors of primary grades, and elementary-school principals. The children ranged in chronological age from six and a half years to fourteen years and five months. The range in mental ages was from six years eleven months to thirteen years. The range of intelligence quotients was from 90 to 129 on the Stanford Revision of the Binet-Simon Tests. The children had all been exposed to reading for a year or more and had either failed entirely to learn to read, or were below their grade in reading ability. These facts indicate that the clinic was dealing with children of normal or superior intelligence who for some unknown reason were failing to attain promotion because of reading disabilities.

The work of the clinic staff was to discover any and every possible cause for the reading disability of each child. Each staff member started work with no preconceived idea as to what was the cause of the reading disability for any individual child but

Note.—An address given before the Kindergarten Section of the Ohio State Educational Conference and included in the printed proceedings.

with many possible causes in mind. First of all, every child was given a physical examination. The physical findings were as follows: twenty cases of malnutrition as diagnosed by fatigue symptoms, that is, posture slumping and prominent abdomen not caused by lack of food; twelve cases of extreme restlessness, one half of which were malnutrition cases; eight cases of poor dentition; seven cases of defective hearing; six cases of diseased tonsils; five cases of mouth breathers; two cases of speech defects; and one case of goiter.

Next, every child was given an eye examination by the clinic oculist. Nearly all had a refraction test, and glasses were secured in cases where they were needed to make the vision normal. Twenty-six children had normal vision; eighteen had defective vision. Six of the children with defective vision were already wearing glasses. Eight had serious eye-defects uncorrected; these were corrected during the summer session. Four had definite eye trouble, but parents refused treatment.

The psychologist had the results of the Stanford Revision of the Binet-Simon Test for every child. She also gave every child the Healy Picture Completion Test No. II. A test for handedness was given, using the grip test to measure the strength of each hand. Dr. Walter Miles' Ocular Dominance—Demonstrated by Unconscious Sighting—Test was also given each child. The combined results of handedness and eye dominance is as follows: eighteen children had right-hand and right-eye dominance; five had left-hand and left-eye dominance; eight had right-hand and left-eye dominance; one had left-hand and right-eye dominance; one had no dominance of hand or eye; four had right-eye dominance and no hand dominance; four had left-eye dominance and no hand dominance; two had right-hand dominance and no eye dominance; and one had left-hand dominance and no eye dominance.

THE reading specialist gave all the children the Gates Primary Reading Tests, and those whose scores were high were given the Gates Silent Reading Tests. These tests were used because a variety of types of reading could be tested and because they yielded rather good diagnoses of reading disabilities as well as reading ages and grade placement. For further diagnoses in reading, the Gray's Oral Reading Paragraphs were used, and the mistakes were analyzed by the methods described

in Marion Monroe's *Methods for Diagnosis and Treatment of Cases of Reading Disabilities.*[1]

The Diagnostic Reading Examination for Diagnosis of Special Difficulty in Reading by Marion Monroe was given each child to discover whether the cause was due to lack of dominance of the hemispheres, causing reversals in sequence, in orientation, or both, whether the child was a mirror reader, or a mirror writer, as well as to check on faulty vowels, faulty consonants, addition of sound, omission of sound, substitution of words, addition of words, omission of words, and repetition. Checks were also made on the children's ability to use phonetic helps, on their ability to discriminate between sounds, on length of eye-span, and on any irregularity of eye-movements, on the span of attention, on lip-movements, and whether they were word-readers. Checks were devised to discover whether the children were poor in comprehension, and whether they were at the memory stage of reading. Their interest in or aversion toward reading was noted. Verbal as well as reading vocabulary was checked. The background of experiences as a basis for reading was noted. Check was made on the child's belief in his own ability. These checks were not made in vain but cleared the situation and solved most of the problems, pointing the way for remedial work. The reading specialist supervised the student's individual instruction of the child and held conferences with the student after seeing his work.

The range of grade retardation was from zero to seven grades. The retardation in months, attained by comparing the reading age with the chronological age, was from zero months to forty-one months. The retardation in months, attained by comparing the reading age with the mental age as computed from the results on the Stanford Revision of the Binet-Simon Test, was from zero to forty months. The zero retardation in reading grade and reading age as compared with both chronological and mental age would have been automatically thrown out according to some schemes of procedure for remedial work, and yet they represented in several instances serious cases which, because of defective vision or personality maladjustments, would have retarded the children all through the grades if they had not been corrected. Personality maladjustments were often

[1] Worcester, Massachusetts: Clark University, 1928. pp. 335-456. (Genetic Psychology Monographs, Vol. IV, Nos. 4 and 5)

caused by too much pressure in the home for greater achievement, too severe punishment by the father, inability to adjust to the group situation at school because of the great drive for individual attention, or timidity in making social adjustment.

THE personality maladjustments were discovered by the social workers who went into the homes. Through the cooperation of one or both parents, they were able to obtain quite a complete social history emphasizing the factors that bore directly upon the reading problem. This social history included the child's ancestral background, the family background, the attitude of parents towards the child's reading difficulty, for example, over-anxiety, making comparisons with other members of the family, worry about the child's disability in relation to vocational and social achievement. A check was made on other children in the family, and any special achievements they may have made, and their reactions to this particular child were noted. For example, they noted answers to questions such as the following: Do they feel superior? Do they nag the child or help him? The social history included a detailed developmental history of the child, the child's social responses to the group within the home and outside, and a minute study of the child's emotional responses, answering such questions as: Is he quick to anger? Is he easily discouraged? Is he shy or aggressive? Is he self-reliant? How does he attack a problem? What is his attitude toward reading? Has he any hobbies?

The psychiatrist, using the social history as a basis for his interview with the child, studied the problem from the angle of the child. He and the student were invaluable in getting this point of view, which is so rarely brought into the study of reading-disability problems. The psychiatrist tackled the problem of the behavior of the child in the following way: Since children's behavior is caused by pressures from without and drives from within, what are these pressures and drives? Since bodily condition, intelligence, environment, racial or national stock, and emotional life of the child are factors underlying behavior, what is the status of these factors in the life of the child being studied? Detailed notes were recorded.

The student spent one hour daily with the child, gaining his confidence, discovering his interests, as well as the richness of his experiences, to see where they needed to be supplemented.

He also studied the child's attitude toward reading, trying all the time to establish within the child himself a feeling of need, a desire to learn to read. This was accomplished during the six-weeks summer session with practically all the children.

The classroom teacher carried on an activity program with thirty-four of the clinic children but did not attempt to teach reading, for that was taught entirely by the students during the hour spent daily with the children, which has already been described. As the class was large, ten of the younger children were distributed in the primary classrooms of the observation school. The classroom teacher was asked to study the children's personality traits, the ability of the children to adjust socially, and the children's responses to class or individual activities.

THIS objective study of each child by the specialists culminated in a staff meeting where the director of the clinic asked for detailed reports from each specialist, including the student who was working daily with the child and the classroom teacher. The principal of the observation school was present also. The staff consisted of ten or more people who had all come in close contact with the problem under discussion. As the objective evidence was detailed, any member of the staff was at liberty to ask for further details or to question statements. When all the material had been presented, the psychiatrist gave his summary of the case. Suggestions for remedial measures were given by members of the staff. The suggestions for home procedure were given the parents in a personal interview by the social worker, the psychiatrist, or the director, depending upon which one had made the most effective contacts. All reports were typed and retained in a folder for each child. This material formed the basis for the reports which were sent to the school in September as the child re-entered school.

The students meeting in class daily for one hour received the valuable points of view of the various specialists by having them present to the students the background of their field in several lectures. Techniques of procedure were so taught that this work could be carried on in the field. Reports of the carry-over of the work of the reading clinic by teachers, supervisors, and principals have been most gratifying. Each student left the course with the idea that he could ameliorate many of the children's reading problems by this all-sided view of the many

possible causes of reading disabilities. Great emphasis was placed upon the fact that in order to cure any reading disability, not only is the analysis of the reading disabilities necessary, but also a lasting cure is dependent upon physical and mental health.

A GENERAL survey of the work of the Reading Clinic having been given, it will perhaps be valuable now to see one of the children in a more detailed description. Peter has been chosen because he is a child illustrating the way lack of dominance affects a bright child's reading ability. Peter is an American boy in Grade II-B, seven years and nine months old. He comes from a home of cultural advantages and one of interest in and appreciation of intellectual attainments. He has an excellent oral vocabulary. His activities and experiences have been rich and varied, and his tastes and interests have reached a point of maturity so far in advance of his ability to read that the material he could read with any degree of success is most uninteresting to him, and his own reading contains no joy for him. Luckily, his other interests are so rich and the attitude at home so normal that he has no serious personality problem.

I. Mental attainments—
  Stanford Revision of the Binet Test
    Mental age, 9 years 3 months
    Chronological age, 7 years 9 months
    Intelligence quotient, 119
  Healy Pictorial Completion Test No. II
    Mental age, 9 years 9 months
    Intelligence quotient, 126

II. School achievement—
  Given Gates Primary Reading Test, June 25, 1929—
    His score showed that he had progressed almost through the first grade as interpreted by the norms on this test. The norms for the school in which he was enrolled were even higher than these general norms. He was supposed to be promoted to Grade II-A.
  Gray's Oral Reading, given June 27, 1929—
    His score was zero. He made eight errors in first paragraph: he called dog "boy," wanted "wouldn't," and after "farther than." He made many repetitions, and he had to be told "without" and "began."
  Marion Monroe's Analytic Reading Tests—
    Many reversals were found when this test was given: *x* for *z*, *n* for *u*, *p* for *q*, *pig* for *dig*, *cared* for *cart*, *was* for *saw*, *name* for *man*, 18 for 81, 20 for 02, 14 for 41, and 12 for 21.
  Mirror Reading Test—
    When given the mirror-reading test it was found he could read the whole paragraph very well.

The diagnosis of his reading disability showed he had the ability to read with ease through the mirror, and his many reversals in orientation and direction in ordinary reading showed that dominance of the hemispheres had not been established and confusions of words and letters resulted. His other disabilities were: faulty vowels, faulty consonants, addition of sounds, repetition of words, substitution of words, meager reading vocabulary, and no self aids.

His eyes were tested by an oculist and showed no defective vision. The physician found poor condition of the nervous system and many evidences of fatigue. Peter's general attitude was one of friendliness, courtesy, obedience, and confidence; and adults as well as children enjoyed their contacts with him.

A VARIETY of remedial measures was used. The tutor discovered that his chief interest was in things of a mechanical sort—boats, engines, trucks, airplanes, and motors of all kinds. He had a secondary interest in animals, especially dogs. Materials based upon these interests were used and charts were made from his experiences written in words at his reading level, and read by him. He read *Tatters*, an appealing story of a dog and *The Float-Boat Toy Model Book* with keen enjoyment.

As Peter was a mirror reader and had many confusions in consonants and words—in fact, seeing things backwards most of the time—we used the findings of Samuel T. Orton at the Iowa State Psychopathic Hospital[2] to explain this condition and also the work of Marion Monroe for analysis of his disabilities. For the remedial work, the kinaesthetic method was used, which so far is the only one that has proved successful in curing these cases of reversals and confusion.[3] Phonetic rules were used in connection with reading material, and he was encouraged to read directions for making ships which he followed out himself. Informal check tests such as true-and-false statements and questions with multiple responses were used.

At the end of six weeks Peter was again given a second form of the Gates Primary Reading Test. His average read-

[2] "The 'Sight Reading' Method of Teaching Reading as a Source of Reading Disability," *Journal of Educational Psychology*, XX (February, 1929), pp. 135-43.

[3] Fernald, Grace M., and Keller Helen. "The Effect of Kinaesthetic Factors in the Development of Word Recognition in the Case of Non-Readers," *Journal of Educational Research*, IV (December, 1921), pp. 355-77.

ing mark was 2.3 instead of 1.9. He had accomplished in six-weeks' work four-tenths of the work of a year.

The recommendations from the Clinic at the end of the summer course were that Peter be placed in Grade II-A and that he be given individual instruction in reading until he overcame his confusions and had real power in reading. Several suggestions regarding his physical care were made. These were that he be given a thorough physical examination, have no over-stimulation, be placed under a calm type of teacher, have much rest and sleep, and go to camp next year.

The follow-up work was given at school this year. Peter is now having a half-hour of individual instruction at school every day. Three attempts in all were made to gain Peter's confidence and to interest him in reading. First, he did a nice piece of work in helping to construct a rock garden. A list of things used was made, and these words were put into sentences. Peter seemed to lose interest, and there was not enough "urge" to warrant more work in this project. The second effort made was to give him the privilege of selecting a story to read to the children in his grade. Each Friday afternoon each child reads a favorite story. Peter chose "Red Feather" and worked on a story until he had prepared it well. He then read it to the group. The third and most successful attempt was made through his interest in building a chassis. He dictated two stories: "The Auto Story" and "The Trailer." These were typed. The first, a story of 189 words, he read very well. He is still working on the second story.

The Reading Clinic feels therefore, that Peter is well on his way to real achievement in reading. He said to his teacher the other day after his half-hour of work, "Why I forgot I was reading." This has been made possible by the continuation of the program of the Reading Clinic in his school, where his teacher had been trained in the methods used in helping the individual child. She had been given specific information concerning this child and had been allowed to give him a half-hour's individual instruction. Progress, such as this, has been achieved only under these conditions. If Peter had been put into his classroom with no follow-up work, he would have no doubt developed a serious personality problem and all the benefits of the summer's work lost. Diagnosis without continued remedial work in a pleasing situation is useless as far as the child is concerned.

Reading Methods for Clinical Cases

By JULIA DETRAZ

THE methods of teaching used in the attempt to remedy the reading difficulties discovered by various tests at the Reading Clinic conducted last summer at Western Reserve University are as important as the methods of diagnosis. Miss Clowes in her report has told of the tests used for diagnosis; I shall discuss the difficulties found and remedies used.

One difficulty was the complete lack of interest in reading as such. Overcoming the reading difficulty had become a vital interest for most of the children, but this did not mean an interest in the actual reading material presented. This lack of interest would be the natural, expected reaction to failure, for all of us are interested in reading only when we get some thought from that which we read. In many cases this lack of interest was accompanied by an extreme consciousness of failure and self-consciousness in reading, both of which emphasized the difficulty and made success doubly hard to achieve.

A second difficulty was the usual one with non-readers, namely, the inability to comprehend effectively the character of the word forms. This inability was especially marked in the mirror readers and in the cases showed many reversals in reading words such as *saw* for *was*, *on* for *no*, and by complete confusion over new word forms. A third difficulty was the lack of phonetic aids for independently working out new words, in some cases accompanied by lack of knowledge of how to get help in recognizing a word from the content.

Poor eye-movement was a prevalent difficulty, too; it was evidenced by an extremely short eye-span, by jumpy uneven movements of the eyes with many regressions, by inaccurate return sweeps with frequent skippings of entire lines, and by long fixations. The fifth difficulty was the inability to comprehend the material read even when the words were recognized. This was encountered in only a small number of particular cases, for with but a few exceptions the children understood a surprising amount of what was read, considering how few words were recognized. These five difficulties, then, were the outstanding ones encountered with these particular forty-

NOTE.—An address given before the Kindergarten Section of the Ohio State Educational Conference and included in the printed proceedings.

four reading-clinic cases. Of course there were varying degrees of each difficulty and varying combinations of them in each case.

In attempting to find ways of meeting these reading difficulties we kept in mind that new methods must be found to meet the particular difficulties of each of the children, since the usual methods of teaching reading which had proved successful with the other thirty-five or forty-five children in each classroom had proved wholly or partially unsuccessful with these.

Interest in reading seemed the most important point of all, and consequently each tutor tried from the first day to find the child's interest and, working with that as a basis, to show him how reading would help to further his interest. One little girl was most interested in dolls, and for her a doll's pattern was purchased which she was anxious to try but which could be used only by reading the directions. For the child interested in adventure, a treasure hunt was planned, the typed directions providing a thrilling search ending in the finding of real treasure. There was a trip to the zoo for the child interested in animals, with the writing of a letter asking mother's permission, with directions for reaching the meeting place checked by reading, and followed, after the trip, by reading about some of the animals seen. In such ways the tutors tried to meet the interests of the forty-four children in the clinic.

As a vital means of furthering interest each tutor tried to make certain that every reading situation provided a reasonable degree of success, in order that each child might soon begin to feel able to read. It was interesting to see most of the children choose thin little books such as *The Little Book, Sally and Billy, Tatters,* one of the "Social Science Readers," including *An Airplane Ride, The Story of an Engine,* and so on. A book of this size did not present such an alarming and overwhelming task as did thicker books, and the child could finish reading the whole book in a reasonable amount of time and talk about it.

Objective evidence of progress proved of high interest and a great incentive. Hence, some sort of record of success was devised by each tutor, for some of the children in terms of words remembered or of pages read, and for others by means of the McCall Crabb Standard Test Lessons in Reading, which provide for a daily record. The latter were used without timing, however, as emphasis upon speed was to be avoided for most of the children at this stage in their reading development.

For meeting the difficulty of perceiving and comprehending words, a great variety of ways was tried. In this connection it is wise to remember that even though medicine will cure a sick person we do not prescribe it for every well person also. For the latter it would likely prove highly injurious. So with the normal reader we avoid calling attention to the separate letters of a word and avoid analyzing the word form unless difficulty is encountered in recognizing it. With the special reading difficulty case, however, one effective method is to help the child analyze the parts of the word and pronounce it by syllables.

Then there is the kinaesthetic method as used by Fernald and somewhat modified by Gates, too.[1] The child fails to recognize a word, the word is written or printed on a piece of paper, and the child traces it with his fingers saying the word slowly as he traces. When he thinks he has traced the word often enough to have a mental vision of it, the copy is removed and he writes or prints the word, saying it as he does so. If the word is wrong, he again traces it, and so on. This method is used most successfully with the mirror readers and confusion cases before mentioned, and it seems to be effective in cases when every other method fails. It gives a feeling for word form needed by those with confused brain pictures of the word. Care must be taken not to overdo the use of this method, and to be sure that the words are those needed in content and that the child immediately reads them again in content, for experience goes to prove that words recognized separately are not therefore recognized in content.

For those having difficulty in correct discrimination of the beginning letters of words, cards were used, one card with the word and picture and one card with the word alone, the words used at any one time being similar in form except for the initial letter, as *ball, fall,* and so forth. The child matched the word card with the word-and-picture card if he failed to recognize the word. Similar cards were used to help those who confused or tended to overlook the endings of words. In this case words beginning alike were used. The words were also given in columns for drill, so placed that the differences could be easily noted, and the child's attention was called to these differences. Detailed directions for coloring a picture or for making some-

[1] See Footnote 3, p. 267. *Also,* Gates, Arthur I. *The Improvement of Reading.* New York: Macmillan Company, 1927. p. 306 ff.

thing forced attention upon each word. A multiple choice of three sentences, similar in most of the words, as a check on comprehension of material read also helped in careful discrimination of word form in a natural reading setting.

The third difficulty mentioned, the lack of independent phonetic aids in recognizing new words, was practically universal and was met by giving systematic work in phonics of the type needed by each case, always with emphasis upon blending the sounds to make a complete word. Aids to accurate word recognition also helped correct faulty eye-movements, for if the words are recognized, the eye can move more regularly along the line. Of special help in developing right eye-movements was material simple enough to be read easily and successfully. We concentrated upon these two ways of correcting eye-movement difficulties during this particular six weeks. In certain cases some very temporary devices were used, such as a thin strip of cardboard run along the line covering the words read, so as to avoid regressions, or a marker used to make sure that no lines were skipped, and sometimes even a pencil pointer run along under the line to keep the eye moving in the correct direction. The tutor explained to the child the reason for using such a device and secured his interest in eliminating its use.

For the few cases having difficulty with the comprehension of the material when the words were recognized, careful checks were used consistently. The tutor questioned carefully, helping the child to understand better, or worked out checks for the material such as questions offering a multiple choice, sentences to be completed, and so forth. Many such checks are given in *Exercises and Checks on Silent Reading*, by Zirbes and Keelor, and in Chap. IV of *The Improvement of Reading*, by Gates.

As a result of the work with the forty-four children of this Clinic it appears that twenty-five tutoring periods of forty-five to fifty minutes each are sufficient for diagnosing the reading difficulties, for discovering the best methods to use in remedying them, for making a good beginning in reading instruction by rousing interest in reading and by giving experiences with successful reading, and for starting to develop independent aids to reading. Systematic, individual work along the line suggested by the Clinic staff would have to be continued for at least a year to secure any real success in developing normal reading ability in most of the severe reading-difficulty cases.

Selecting Research Techniques

By W. K. WILSON

One of the many critical charges which educational research has to face these days is that of drawing conclusions based upon inappropriate techniques. Other charges are those of failing to state the basic assumptions underlying a study or defining clearly the terms used. It seems that a twofold, self-appointed task which every research worker should undertake is to examine his own work critically for such errors of procedure and to attempt to correct false impressions made by those who at times have not been so self-critical.

This article is a criticism of certain inappropriate techniques and procedures as noted by the writer in a study, "The Mathematics of General Inorganic Chemistry," reported in a recent issue of *Science Education*. The study is concerned with high-school and beginning college chemistry. After quoting the authors as to their techniques, I shall first state their conclusions reached—there are six of these—and then discuss them in relation to the techniques used in deriving the data from which they were formulated.

Fifteen high-school textbooks in inorganic chemistry and eighteen similar books used in colleges—all published within approximately ten years—were minutely examined page by page for instructions and problems that involved any mathematical operation. Data were recorded on cards in such a manner that the cards could be selected and arranged for any desired grouping of data.[1] The conclusions reached were:

(1) There is comparatively little mathematics presented in our present texts of general inorganic chemistry.

(2) Such mathematics as is present is concentrated to a high degree in the first chapters of the texts.

(3) Simple proportion is a principle of mathematics used almost to the exclusion of other forms in general inorganic chemistry. This being true, it would appear that such foundation of drill and clear understanding might be laid that no student should suffer mathematical handicaps in his beginning chemistry course.

(4) The question "How much?" is the vehicle on which most of the chemical mathematics is brought into a course; the "gas laws" are close behind. Chemistry and physics, therefore, are each represented.

[1] Boles, Leo L., and Webb, Hanor A. "The Mathematics of General Inorganic Chemistry," *Science Education*, XIV (March, 1930), p. 540.

(5) The most popular chemical elements for mathematical treatment are oxygen, hydrogen, and chlorine; the compounds that serve mathematics best are potassium chlorate, water, and sulfuric acid.

(6) The treatment of mathematics in high-school and in college textbooks of inorganic chemistry is strikingly similar in relative amount, type, and applications.[2]

In criticizing these statements, the study as reported is used. The authors state specifically that "There is on file, however, both raw and refined data to cover all of these points [items not given in the report], if there should be inquiry concerning what here is left untold."[3] Perhaps these unpublished data would serve to answer some of the criticisms given.

The first question arising in criticism of this study is: What did the authors include in the term "mathematics"? They have given no definition of the term, although they do say that the texts used were examined for "instructions and problems that involve any mathematical operation." Did they include mathematical vocabulary? In examining reading content other than actual problems, did they count as mathematical the complete discussion involving mathematical terms and concepts, or only the actual mathematical terms and questions? For example, in McPherson and Henderson's *A Course in General Chemistry*, page 197, there is a paragraph on the heat of fusion and solidification, involving the mathematical relations existing in this phenomenon. Is this whole paragraph mathematical or just the sentences containing mathematical terms or demanding mathematical interpretation? Or do only the mathematical terms constitute the mathematics here involved? The use of the term "amount" in reference to mathematics is questionable. If the term may be used, however, the amount of mathematics here involved would vary from 175 words in the first case, 75 words in the second, to 9 words in the last. To sum up these queries, could someone else take the same list of texts, use the techniques as described, and get the same results? If not, certainly something is wrong with the techniques used.

Conclusion (1) is based upon the actual measurement of book space covered by mathematics as compared with non-mathematical material. Does anyone dare say that the amount of mathematics presented in written form is directly proportional to the space covered in presenting it? Two examples,

[2] *Op. cit.*, p. 546.
[3] *Op. cit.*, p. 540.

taken from the text previously mentioned, will suffice to illustrate my point: Heat of fusion and heat of vaporization are discussed mathematically in paragraphs of 101 words and 175 words respectively, while both of these principles are further exemplified in a problem of only 25 words.[4] Can we say that the mathematics involved in this problem is only one-eleventh of the material of the two paragraphs? Or can anyone truthfully say that the amount of mathematics involved in a problem is proportional to the number of words used in stating it? Using a scale in which one-eighth page is the unit, on page 467 of this text the writer found two problems covering three and one-half units, while on page 575 are seven problems covering only three units. Would the authors of the study say that there is one-sixth more mathematics in the former case than in the latter? Of course such an assumption is ridiculous. Then what is the standard unit for measuring "amount" of mathematics?

In tabulating the data from which the third conclusion is derived, the mathematics of chemistry was classified into proportion, multiplication, addition, division, algebra, subtraction, equations, and logarithms. The report does not tell how this classification was derived, nor what types of items were included under each. One might protest that both multiplication and division are included in every proportion, or that the solution of every proportion involves solving an equation. And how many people who have ever studied elementary algebra state a proportion without using x for the unknown? Is this not algebra? And does not almost every equation involve both algebra and at least one of the four fundamental operations mentioned? Certainly such a classification of items in a report of this kind should not be made without an accurate description of the type of item going into each division of the classification.

Another criticism based on the third conclusion is aimed at the statements made in the body of the article to the effect that, since simple proportion covers about 85 per cent of the mathematics involved in chemistry, all the difficulties that students of chemistry have with their mathematics should disappear if more drill in solving simple proportions were given. Such statements are often made in reference to the mathematics of various subjects, but they are open to strong challenge. A careful analysis of problem-solving will quickly reveal that it is not how to

[4] McPherson and Henderson, *op. cit.*, p. 203.

carry on a certain operation but when which causes most of the trouble, especially with high-school and college students. The problem, "If 5 hats cost $10, what will one hat cost?" might call forth such answers as $50, $2, $15, $5, 50 cents, or even −$5, all of which might be correct if only the accuracy of the operation used were taken into consideration. Granting accuracy in the fundamental operations, this problem still requires the important decision as to what operation to use in order to obtain the correct solution. In other words the fundamental requirement in the solution of this, as well as all other concrete problems, is the recognition of the relation existing between the mathematical quantities used, as determined by the language setting up these relations. This fact again suggests that the number of words in a problem is no indication of the "amount" of mathematics involved.

The other conclusions presented are apparently valid, per se. Their only difficulty lies in the fact that they are made largely from data based upon assumptions not clearly set forth and upon the use of terms not clearly defined. For example, we may readily agree with the authors as to the distribution of mathematics throughout the texts studied if we do not stop to question their idea, not defined, as to what constitutes mathematics.

In conclusion, let me say that this article should not be construed as an attempt to belittle the work of any individual investigators. It is an attempt to point out that, as research workers, we cannot be too careful in reporting studies, nor too critical of ourselves in examining the work we are presenting to the public as worth-while educational research. We owe it to our profession to be painstakingly accurate, everlastingly critical of our techniques, and forever conservative with our conclusions. In every piece of research we must state clearly the assumptions upon which we are basing our study, accurately define all terms where lack of such definition might throw the shadow of doubt on our work, and scrutinize our conclusions in the light of all knowledge that may be gathered relative to our problem.

[Vol. IX, No. 10]

W. K. Wilson, research assistant to Dr. Tyler of the Division of Achievement Tests in the Bureau of Educational Research, has accepted a position with the Department of Buildings and Grounds, the University of the State of New York.

EDITORIAL COMMENT

A READING clinic is a wonderful institution, God wot! We are fortunate, therefore, to include in this issue two articles describing the activities and organization of the Reading Clinic maintained at Western Reserve University last summer. The reading specialist was assisted by a social worker, a physician, an oculist, a psychologist, a psychiatrist. The tests used were chosen to supplement each other, and diagnosis was decided upon by the specialists in conference. The remedies prescribed were approved by the specialist into whose particular province the child's chief deficiencies fell, and the tutor supplemented these by a daily search for ways of enlisting the child's interest in his own improvement. The variety of specialists who co-operated in the work, the precision and care exercised in reaching the diagnosis, and the experimental and cautious attitude evident in the use of the remedies indicate a truly scientific attitude. The personnel of this clinic compares well with the staffs of the clinics sponsored by the medical institutions or the research bureaus maintained by different industries.

Such a clinic should be a part of the school system of each large city, and through co-operative effort clinics for the diagnosis of deficiencies in school subjects should be maintained by the towns and rural communities lying in adjacent sections of a state.

The volume of literature on the ways of detecting disabilities in the three R's is already large, and it is growing all the time. There are specialists who have worked in the field for years. The insight into individual differences gained through the studies made in bureaus of educational research and psychological clinics promise protection to the child of average ability and superiority who through some obstacle is unable to master the fundamental processes of reading or arithmetic—the child often classed as dull or feeble-minded by his teachers. These obstacles include physical handicaps of vision or hearing which often can be corrected but whose presence and extent should, in any case, be known. Emotional disturbances—complexes caused by too severe discipline at home, by unfavorable comparisons with the progress of more fortunate brothers and sisters, or by other maladjustments more difficult to detect—may have their

share as causes of subject-matter disabilities. Mental confusions, of course, have a large place: poor methods of perceiving, inadequate understanding, overemphasis of a device which should be used as a tool—these and many other wrong ways of thinking accumulate until the child is confused and after continual failure is discouraged.

Within the primary grades these children who are potential failures should be detected and salvaged. The conservation of the educational resources—these children of average or superior ability—should be a slogan in every school system.

J. H. M.

THE Ohio State University in co-operation with the State Department of Education of Ohio and the Payne Fund of New York City announces an Institute for Education by Radio, at Columbus, Ohio, June 23 to July 3. This Institute is primarily for radio broadcasters, but it will be of interest and value to professional educators as well. The discussions will be led by thirty expert broadcasters and educators from Great Britain, Canada, Mexico, and the United States. For special bulletin or other information concerning the Institute, address Dr. W. W. Charters, director, Bureau of Educational Research, Ohio State University, Columbus, Ohio.

A SET of standards for evaluating the quality of manuscript writing has been prepared by Edith U. Conard and published by Teachers College, Columbia University, New York City. The standards are divided into two scales, one for pencil writing in the lower grades and the other for pen writing in the intermediate grades. The samples comprising the scale have been selected from five thousand samples of manuscript writing and have been placed in relative order by twenty-six judges. The absolute value given to each sample was determined arbitrarily and ranges from 3 points for very poor to 73 points for very excellent. The final value given to a sample was the mean of the scores of the judges; hence the scores are not comparable to those given to the common scales for cursive writing.

The reliability of the scale probably varies with the training and judgment of the appraiser. In most cases a reasonably reliable evaluation of handwriting specimens can be made using this scale, by calculating the mean of the judgments of three judges who are rating the writing independently of each other.

READINGS

CLARK, HAROLD F. "What Is Correct Occupational Distribution?" *Teachers College Record*, XXXI (April, 1930), pp. 617-23.

"First, have the economists an adequate answer to the question of how many people should be in each occupation? Second, have the people interested in schools any plan by which this proper number of people can be put in each occupation?"

Setting up the assumption that "equal natural ability should command an equal reward in all occupations," the author points out some current fallacies in the belief that education is of value to everybody and the weakness in our schools in following a plan of training for occupations without adequate knowledge of supply and demand in the various fields. He urges the continual presentation of information regarding opportunities in various occupations and removal of barriers which tend to divert people from certain ones. A number of searching questions was asked, the answers to which are not now available, but which should be provided as soon as possible.

WAGENHORST, L. H. "The Relation between Ratings of Student-Teachers in College and Success in First Year of Teaching," *Educational Administration and Supervision*, XVI (April, 1930), pp. 249-53.

A comparison of the ratings of 191 graduates of the State Teachers College at Slippery Rock, Pennsylvania, received from superintendents, with their practice-teaching grades, scholarship, and intelligence quotients, revealed the following correlations:

Practice-teaching rating and first year of service rating	$+ .23 \pm .05$
Intelligence (Otis) and first year service rating	$+ .001 \pm .05$
Scholarship (quality points) and first year of service rating	$+ .01 \pm .06$

Despite the low correlations between scholarship and first year's teaching success, the author feels that those students who barely pass their college work represent bigger chances of failure than those who made better grades. This is based on the fact that the ratings for the ten students who ranked lowest in grades were 7.8 points lower than the median for the whole group.

No consideration was given the possibility that the environment under which the teacher's first work was done might have materially affected the success rating, as might also the administrative and supervising facilities provided the beginning teacher.

VANDERSLICE, H. R. "The All-Year School in Aliquippa, Pennsylvania," *Elementary School Journal*, XXX (April, 1930), pp. 576-85.

The full utilization of the school plant throughout the entire year is a problem which has long irked school administrators. The public schools at Aliquippa, Pennsylvania, now offer a unique solution to this problem by introducing the quarter plan, by means of which three-fourths of the children are in school every quarter, while one-fourth are on vacation.

Mr. Vanderslice cites the following advantages of such an organization: it results in a substantial saving of school funds; over-age children and those

who wish to advance more rapidly can go to school the entire year; it is easier for the older pupils to secure remunerative work when vacations are spread over the entire year; some teachers are able to earn greater pay.

Evidence gathered thus far indicates that there is apparently no harmful effect on attendance or health of pupils. The quarter plan for the public schools is so significant in its implications for American education that no time should be lost in setting up careful studies of all schools utilizing it.

TYLER, R. W. "Evaluating the Importance of Teachers' Activities," *Educational Administration and Supervision*, XVI (April, 1930), pp. 287-92.

Differences in teaching activities thought desirable or actually performed by teachers and those thought most worth while by educational philosophers constitute the basic content for a course in philosophy of education, since "the prospective teachers must face such conflicts intelligently in developing their own philosophy of education."

The following correlations were found between the evaluations of philosophers and critical students, and those of teachers, listed in the *Commonwealth Teacher-Training Study*.

Philosophers' ratings of importance and the teachers' rating of frequency	.764 ± .012
Philosophers' evaluation and teachers' ratings of frequency	.489 ± .022
Philosophers' evaluation and teachers' ratings of difficulty in learning	.380 ± .024
Philosophers' evaluation and teachers' ratings of desirability of being included in the training course	.571 ± .019

Six activities listed among the 30 per cent most important by philosophers were rated among the 30 per cent least important by teachers, while seven activities listed among the 40 per cent most important by teachers, are found among the 30 per cent thought least important by philosophers.

LEWIS, E. E. "Desirable Principles of Teachers' Salary Schedules," *American School Board Journal*, LXXX (May, 1930), pp. 45-46.

In this article the author traces the evolution of the idea of salary schedules during the past fifty years. Heretofore most of our salary schedules have been built for large cities, but the author points out that "we need salary schedules in rural and village, and in fact, I am of the opinion that they are more needed in rural areas than elsewhere." The writer concludes the article by listing fourteen principles that should be considered in the determination of salary schedules. Among these are the following: that the interest of children, the profession, and society must be protected; salaries must bear some ratio to the standards of living; school years and subjects are of equal importance in children and should therefore be so recognized in salary schedules; the maximum of most schedules is reached too soon. To those interested in the problems of salary schedules, a careful study of these principles would be very worth while.

MOEHLMAN, ARTHUR B. "The Sociological Survey in the Public Relations Program," *Nation's Schools*, V (April, 1930), pp. 72-77.

The author presents in this article an excellent way of establishing a continuous public-relations policy for the school system. A comprehensive analysis of the required data has been made under nine major heads—racial

composition, family conditions, economic life, ethical life, community life, leisure activity, past history of the community, leader-group studies, and analysis of social conflicts. In disseminating the information to the public the author recognizes that economic organizations such as luncheon clubs, chambers of commerce, and labor unions must be well informed concerning school policies.

The underlying principles of the sociological survey are to have an organization that information may be secured without antagonizing the people, to have the survey continuous, and to have it so organized that some field agent will be in direct contact with the division under consideration. Such a plan makes a sociological survey a continuous research project to be carried on preferably by the principal and the teachers.

DIAMOND, THOMAS. "What Is Industrial Education?" *School Review*, XXXVIII (April, 1930), pp. 280-85.

Most readers will agree with the writer of this article when he suggests that industrial education involves not only skilled training, but also an understanding of the problems of modern industry. Some, however, will differ with the statements that this type of training should enable a person "to adjust himself more efficiently to his environment in industry" and that "matters of policy within an (industrial) organization are not debatable in a group such as we are considering." They may prefer to believe that factory environment and factory policies should be adjusted to certain of the needs of the worker.

Further, if the pros and cons of such crucial problems as the five-day week, piece-work system, close the open shop, workers' pensions, and group insurance are not to be discussed in a class in industrial education because they may involve matters of policy within a factory organization in a particular city, then such a course of study will be emasculated indeed. Where circumstances make it impossible for the industrial-education classes to be used for discussions of controversial questions, the school might well provide such a place.

In Paper Covers

SHELDON, HENRY DAVIDSON. *A Critical and Descriptive Bibliography of the History of Education in the State of Oregon.* Eugene Oregon: University of Oregon, 1929. 16 pp. (University of Oregon Publication, Vol. 2, No. 1)

This bibliography lists books and periodical literature pertaining to the history of education in Oregon from Bancroft's *History of Oregon* to the latest Ph.D. theses written at the University of Oregon. The most detailed sections are those dealing with the public-school system considered by localities and denominational education through colleges and academies. Annotations are short but are sufficient to indicate the probable use of the references.

DAISY GRENZOW

KIMMEL, WILLIAM GLENN. *The Management of the Reading Program in the Social Studies.* Philadelphia: McKinley Publishing Company, 1929. 110 pp. (Publication of the National Council for the Social Studies, No. 4)

If social-studies teachers wish to come in contact with some mature thinking on the management of the reading program in their field, they should secure a copy of this pamphlet. They can find here, for example, a master list of the

methods that the teachers of New York State have used to stimulate reading, the techniques by which to check readings, and procedures used to correlate reading with class instruction. The author also critically evaluates these procedures. The pamphlet deserves a place in the library of progressive teachers of social studies.

EDGAR DALE

SPECIAL JOINT COMMITTEE ON TAXATION AND RETRENCHMENT. *Construction of School Buildings in the Towns and Smaller Cities of New York.* Albany, New York: J. B. Lyon and Company, 1929. 80 pp.

This report made before the New York Senate gives in detail the various angles of school-building construction in the towns and smaller cities. It is not well organized, perhaps because it is an assembly of contributions.

From the report submitted the following conclusions may be drawn: the board of education has usually had no previous building experience; from the present legal aspect, extravagance is encouraged; there is no adequate check on school expenditures; there is lack of information on the method of financial procedure; there is too much variation in the design and construction of school buildings. The committee recommends more efficient planning, better measurement of educational needs, and a stricter legal code.

D. H. SUTTON

STATE OF INDIANA. *An Analysis and Outline of the Related Subject Work in the Field of Printing.* Indianapolis, Indiana: Department of Public Instruction, Division of Vocational Education, 1929. 21 pp. (Bulletin No. 104)

This outline has been prepared as an aid to the teacher of printing in determining what subject-matter should be taught to the young printer in the shop and to aid the teacher of related subjects in the vocational school in "tying up" his subjects with the needs of the printing trades.

Especial attention is given to English, mathematics, design, science, safety and hygiene, and accounting, as these subjects supply the knowledge immediately needed by the printer in his trade. Necessary skills are also listed.

DAISY GRENZOW

WISEHART, ROY P. *Guiding Principles of Elementary Curriculum Revision for the State of Indiana.* Indianapolis, Indiana: State Department of Public Instruction, 1929. 13 pp. (Bulletin No. 107)

This pamphlet presents a series of principles which are to guide the revision of the elementary curriculum for the State of Indiana. The plan of organization utilized appears to be satisfactory, and the methods of procedure, outlined as a series of statements, should prove of specific help to those formulating the materials for the various subjects of the curriculum.

The seven cardinal principles of secondary education have been taken over bodily by the executive committee and used as their general objectives, in spite of the patent inadequacies of these principles, as has been pointed out by Bobbitt, Counts, and others. Until more careful studies have been made as to the personal and social problems of children, those anxious to make revisions in state courses of study will be able to make only slight improvements on what has already been done.

EDGAR DALE

Books to Read

REEDER, WARD G. *The Fundamentals of Public School Administration.* New York: Macmillan Company, 1930. xii + 579 pp.

During the past decade the graduate study of school administration has become highly differentiated and specialized. Every graduate school of education offers courses in administration specially designed in terms of the work confronting such diverse positions as college president, elementary-school principal, county superintendent, dean of women, high-school principal, and city superintendent. With so many specialties to be provided for it is highly essential that a department of School Administration provide such integrating courses as will insure that men and women specializing in different phases of school administrative service shall have a general view of the whole field.

In *The Fundamentals of Public School Administration*, Ward G. Reeder has provided a text for such an integrating course. It is an excellent book for general courses in administration. It is interestingly written. The author has exercised wide and judicious use of recent research in school administration. His selected references at the end of each chapter suggest a comprehensive and valuable professional library for the school administrator. His "Questions for Class Discussion" are pertinent and stimulating.

The author has vision, he sees school administration in the large as "a servant to teaching and learning," as a service that "facilitates education . . . without financial waste." Beyond the prosaic aspects of the work he visualizes such leadership as that of Horace Mann, Henry Barnard, Calvin Stowe, William H. Maxwell, Andrew S. Draper, and Charles W. Elliott. One suspects even that he has looked outside the field of education for certain inspirations as to the quality of leadership.

There is a touch of humor now and then as when he quotes Mark Twain's "First, God practiced on idiots, then he created school boards." The volume is saturated with common sense and with a fine understanding of the ethics of the profession, as for instance, when discussing questionable tactics he says, "If those in opposition to the work of the schools or of school officials desire to stoop to such practices, well and good; any battle won by such practices is only temporarily won, for eventually truth and justice will assert themselves."

The chief weakness of this volume is its almost total lack of reference to the administration of state educational systems or of higher institutions of learning. But, if I were superintendent of schools, I would want my board members to read certain chapters especially "The Function of School Administration," "The Board of Education and Its Work," "School Administration as a Profession," "Selection of Teachers," "School Budget-Making," and "Public Relations or Publicity." And I think if I could have only one book on school administration I would want Reeder's *Fundamentals of Administration.*

J. CAYCE MORRISON
Assistant Commissioner for Elementary Education, Albany, New York

MCCULLOCH, ALBERT J. *Suffrage and Its Problems.* Baltimore: Warwick and York, 1929. 185 pp. (University Research Monographs, No. 9)

This little volume of 185 pages attempts to give a historical outline of suffrage in the United States followed by a discussion of its chief problems. Although Part I (the historical background), perhaps two-fifths of the book,

is merely preliminary to the problems of Part II, it is the only real claim of the volume to the consideration of the thoughtful reader. The author has divided the history of suffrage into four periods and has compiled useful tables and summaries of the voting qualifications in each.

The rest of the book, however, is of little value. Negro suffrage is surveyed, and the author concludes as a solution that the negro's greatest need is "personal morality" and that education and moral training will uplift him. Woman suffrage, the second problem of the book, is judged as having solved itself by its results. But the foreigner is harshly dealt with. Most of the evils in government for the past generation are attributed to him. The American city is "the cancerous sore that contaminates the whole body politic," and the "core of the evil" is the ignorant foreign voter. In places the volume reads like a Ku Klux textbook. Its usefulness is further marred by loose generalizations, dogmatic statements, frequent quoting of commonplace remarks of prominent individuals as conclusive evidence on mooted points, heavy reliance upon authorities of the eighteen-nineties and early nineteen-hundreds—not one book published since the war has been cited—inaccuracies in footnote citations, and too much repetition. And, finally, few will agree with the author's chief solution of all the major problems of the suffrage, namely, that each voter be required to possess a high-school education.

EUGENE H. ROSEBOOM

YAKEL, RALPH. *The Legal Control of the Administration of Public School Expenditures.* New York: Teachers College, Columbia University, 1929. vii + 167 pages. (Teachers College, Columbia University, Contributions to Education, No. 388)

This study has been conducted to determine what legal control is exercised over public-school expenditures, to isolate and reveal the principles underlying legal control of expenditures, to evaluate the opinions of recognized authorities with reference to the problem, and to develop and suggest a legal code for the use of those who may seek to enact these findings into a law.

The material for this book has been very carefuly selected from state constitutions, state statutes, and opinions of attorney generals. It is presented from the standpoint of the school administrator as well as school boards. A careful examination of the provisions of the proposed code which are contained in this study will be of benefit to anyone who has control and administration of public-school expenditures. It gives evidence of being a thorough investigation of almost all existing legal materials in the field.

D. H. SUTTON

UPSHALL, C. C. *Day Schools vs. Institutions for the Deaf.* New York: Teachers College, Columbia University, 1929. 104 pp. (Teachers College, Columbia University, Contributions to Education, No. 389)

Dr. Upshall has made an exhaustive analysis of all the data he had at hand and has stuck to his material. His deductions are based entirely on the report of Doctors Pintner and Patterson and the survey made by the National Research Council.

However, there are still other factors to be taken into consideration. The day schools have much smaller classes than the institutional schools. The efficiency of teaching often decreases as the number of pupils in a class increases.

Intelligent and well-to-do people, parents of deaf children, do a good deal of pre-school work and then send their children into a day school. Failures in day schools in speech and lip-reading are sent to the state school, lowering the mental average. Mr. Pintner's report recognized this fact, and it is spoken of by Mr. Upshall.

The survey made by the National Research Council considered only pupils from twelve to seventeen. This naturally eliminated many pupils in the advanced and graduating classes, in which grades the greatest mental ability is found. Mr. Upshall recognizes this fact in his discussion. This scope of course reduces the general mental average of the school tested. When these elements would be taken into consideration in connection with the very able study made by Mr. Upshall, the value of his deductions and conclusions would be increased.

J. W. JONES
Ohio State School for the Deaf

JONES, GERTRUDE. *Commencement.* New York: A. S. Barnes and Company, 1929. xi + 116 pp.

One of a series on extra-curricular activities edited by Harold D. Meyer, this book is concrete evidence of the movement "to vitalize commencement." Various types of the high-school commencement program are discussed, and the problems and administrative details, from ushers to publicity, connected with each are noted. Probably the best part of the book is the appendix which furnishes further reference for the teacher regarding whatever type of commencement he may choose.

DAISY GRENZOW

NEWCOMB, THEODORE M. *The Consistency of Certain Extrovert-Introvert Behavior Patterns in Fifty-one Problem Boys.* New York: Teachers College, Columbia University, 1929. 123 pp. (Teachers College, Columbia University, Contributions to Education, No. 382)

The author tells us that for this study, "fifty-one boys were observed over a period of five weeks at a summer camp in an attempt to ascertain whether they displayed consistent behavior patterns of such a kind that extrovert and introvert types could be distinguished on the basis of objective observation." Eight thousand five hundred incidents recorded daily (even hourly) form the basis for a part of the conclusions.

The results indicate that if there are types which may be truly designated by the terms extrovert and introvert, they are not well differentiated by this study. The author suggests that the attempt to adapt therapeutic methods according to type distinction is undesirable, since it would "tend to obscure differences arising from subtle differences in environment, or from peculiar motivations within the individual."

The section devoted to "a discussion of the incidents suggesting how and why inconsistency is found," is readable and will give a good idea of the methods and results of the study to those who find the extended statistical tables rather profitless. The conclusions tend to show the logical nature of the assumptions underlying the concepts of the two personality types, as contrasted with the psychological findings regarding actual individuals.

EMILY L. STOGDILL

ZACHRY, CAROLINE BEAUMONT. *Personality Adjustments of School Children.* New York: Charles Scribner's Sons, 1929. xiii + 306 pp.

The case studies reported in this book, together with the careful analysis of each, show clearly the close relationship which exists between success in school subjects and a satisfactory adjustment not only to the environment of the school, but to that of the home as well. Classification of children as "troublesome," "over-conscientious," "over-dependent," and "over-anxious" is only the first step for the intelligent teacher. A study of the environment of the home, the child's early development, his physical condition, and his general behavior history is an essential step in helping the child to a satisfactory adjustment. The author reports here several extensive and thorough-going analyses of individual cases.

The chapter summaries contain helpful suggestions for the teacher whose first interest is the welfare of each individual child. The services of the visiting teacher, the physician, the psychologist, and the psychiatrist are needed that the classroom teacher may cope adequately with her problems.

AMALIE K. NELSON

HAEFNER, RALPH. *The Educational Significance of Left-Handedness.* New York: Teachers College, Columbia University, 1929. vii + 84 pp. (Teachers College, Columbia University, Contributions to Education, No. 360)

The writer has made a practical contribution to the understanding of handedness. The conclusions indicate that there is no basis for the belief that handedness has significance in school procedure. Judging from the study, there is no connection between handedness and intelligence, the groups differing by only 1.04 points, with a *PE* of 1.76. School achievement does not vary with handedness, the difference between the left- and right-handed groups being 4.9, with a *PE* of 3.25. In like manner, the writer found no relation between handedness and physical status, interests, or emotionality. In the study of interference with natural handedness, little relation is found between change of writing hand and speech defects, physical strength, or loss of dominance of the preferred hand in other situations.

The value of the study lies in the light it seems to shed on old disputes. Nothing new is discovered, but scientific data are used to clarify old beliefs. It clears the way for studies which will give us data on the positive side, tracing the neurological relation between the brain and the two hands, for example, showing us to what handedness is related, as this study shows to what it is not related.

EDITH M. PECK

DARWIN, BERNARD. *The English Public School.* New York: Longmans, Green and Company, 1929. xv + 175 pp.

This review furnishes an opportunity for sparing the reader the constantly repeated definition of "public schools" as applied in English education. The book contains some account of the history of these schools, a chapter on the curriculum and the Royal Commission, and other chapters on school spirit, games, and social life. There are sketches of four or five headmasters. It is pleasantly written by a layman for laymen.

H. G. GOOD

NEW TESTS

A PROMISING test for teachers' colleges and colleges of education is the Coxe-Orleans Prognosis Test of Teaching Ability, by W. W. Coxe and J. S. Orleans, published by the World Book Company, Yonkers-on-Hudson, New York. This test was prepared as one basis for selecting applicants to enter the normal schools of New York State. The validity of the test was determined by correlating the results of the test when given to students entering ten teacher-training institutions in the state with the results obtained from administering a comprehensive achievement test in normal-school work at the end of the first year. The coefficient of correlation ranges from .534 in one institution to .839 in another. The authors believe that when this test is combined with a mental test, with high-school achievement tests, and with records of high-school work, a prediction of success can be obtained which will be accurate enough to advise individual students whether or not to enter upon teacher-training work.

Since the value of the test varies with the standards of the institution, norms are of less significance, and none is provided by the authors. There are two duplicate forms of the test, each containing the following five parts: general information, professional interest, study exercises in education, reading comprehension, study exercises applying principles of education. This test is worthy of trial in teachers' colleges to determine its value for the given institution.

Two sets of instructional tests have recently been published by the World Book Company, Yonkers-on-Hudson, New York. They are the Glenn-Obourn Instructional Tests in Physics and the Glenn-Welton Instructional Tests in Chemistry. These tests are the results of trials and revisions, extending over the past ten years. The physics tests consist of a set of twenty-five tests in mechanics, heat, light, sound and electricity, while the chemistry tests comprise thirty-six tests covering various phases of the subject. The subject-matter of these tests has been checked against widely used texts. There is, however, no indication of the degree to which the tests measure the attainment of objectives other than factual information.

The correlations with teachers' marks and with other standardized tests in the subjects indicate that the tests are reasonably valid measures of the achievement commonly considered important by teachers. The composite of all the tests gives a highly reliable score for individual pupils. The results of single tests can be used with safety in determining group standing only.

A SET of workbooks containing practice exercises and objective tests has been published by the Benton Review Shop, Fowler, Indiana. The publishers did not send sufficient information with the workbook for the reviewer to make an adequate evaluation of them. They are listed here in case some of our readers wish to experiment with them. All of them contain test exercises in objective form for the purpose of providing diagnostic and drill exercises for individual pupils.

Twentieth Century Practice-Exercises in First-Year Algebra, by Helen Goddard

Twentieth Century Practice-Exercises in Sixth-Grade Arithmetic, by L. H. Whitcraft

Twentieth Century Practice-Exercises in Eighth-Grade Arithmetic, no author indicated

Twentieth Century Practice-Exercises in Grammar and Language Usage, by R. E. Wrentmore

Twentieth Century Practice-Exercises in Physics, by Gale Smith

Twentieth Century Spelling Tablet for Test and Study Spelling, by Wendell W. Wright

A workbook has also been published by Ginn and Company, Boston, entitled *California, A Pupil Activity Book,* by Harold F. Hughes. This book contains some objective test material, but its primary function is to provide a laboratory manual for state geography.

R. W. TYLER